

REMARKS/ARGUMENTS

Status of Application

Claims 1-12 and 14-26 are pending. Claims 1, 2, 4, 5, 8-10, 12, 13, 22, 24-26 have been rejected; claims 3, 16-21, and 23 have been allowed; and claims 6, 7, 11, 14, and 15 have been objected to as depending on a rejected base claim, but have been indicated to be allowable if rewritten in independent form.

Applicants gratefully acknowledge the allowance and indicated allowability of several of the claims, and respectfully request reconsideration of the prior art rejections.

Prior Art Rejection

Claims 1, 4, 8, 9, 10, 12, and 26 have been rejected as anticipated by U.S. Patent No. 5,504,402 (Menegoli); and claims 2, 5, 13 (now subsumed into claim 12), 22, 24, and 25 have been rejected for obviousness, either over Menegoli or Menegoli in view of secondary references, namely Suzuki U.S. Published Patent Application No. 2004/0080858 (Suzuki), and Goretski et al. U.S. Patent No. 6,094,020 (Goretski).

In response to a previous Office Action, Applicants argued how the prior art failed to disclose or suggest the present invention where regenerative braking, which is characterized by power to the spindle motor being interrupted, is used during normal operation, as that term is defined. The emphasis in Menegoli is regenerative braking in the event of a power failure, but the specification mentions other contexts where regenerative braking for the purpose of parking the disk head is used. For example, at column 2, lines 6-11, it is noted that

Although loss of the power is probably the primary reason for moving the read-write head away from the disk, the procedure is typically also initiated when the disk speed does not remain within tolerance, positioner error is detected, or write circuit faults that could affect stored data are detected.

Thus Menegoli describes the use of regenerative braking and providing a voltage boost *in response to abnormal conditions*.

Suzuki is, like Menegoli, concerned with retracting the head in the event of a power failure. As such, Suzuki does not overcome the shortcomings of Menegoli.

Goretski describes a scheme whereby it is possible to provide a boosted voltage to the head actuator (voice-coil motor or VCM) during a seek operation. As understood, this is accomplished by rectifying an induced voltage in a secondary stator winding 116 to charge a capacitor to 24 volts (the normal VCM drive voltage is 12 volts), and using this stepped up voltage in at least some seek operations. Goretski does not describe or suggest cutting off power to the spindle motor. Thus there does not appear to be a regenerative braking mode in connection with either charging the capacitor to 24 volts, or discharging the capacitor to drive the VCM.

Applicants stressed the fact that in the specification, “normal operation means that power to the disk drive is within acceptable limits and that further read and/or write operations are contemplated.” This point was also discussed during a telephone conference between the undersigned and the Examiner on March 7, 2007, but agreement was not reached.

The Examiner continues to take the position that “normal operation” is a broad term and there is no claim language disclosing how this is different from the prior art. The Examiner states that for regeneration to start, a change has to occur and that is no longer “normal operation.” Applicants respectfully disagree since the Examiner seems to be saying that the only normal operation is when nothing is happening. Disk drives are commanded to read and write data, and things change in response to these expected operations.

However, in order to expedite prosecution, Applicants have amended the rejected independent claims as follows:

1.	<u>the control logic enters the regenerative braking state with the spindle motor isolated from the first voltage supply node for at least a portion of at least one seek operation to be performed by the disk drive.</u>
8.	<u>wherein at least some of the specified times occur during a seek operation to be performed by the disk drive.</u>
12.	<u>said control circuit enters at least one of said regenerative braking states during at least a portion of at least one seek operation to be performed by the disk drive.</u>
22.	<u>said control logic enters the regenerative braking state with the spindle motor isolated from the first voltage supply node for at least a portion of at least one seek operation to be performed by the disk drive.</u>

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| 26. | <u>said control logic enters the regenerative braking state with the spindle motor isolated from the first voltage supply node for at least a portion of at least one seek operation to be performed by the disk drive.</u> |
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These amendments find support in the specification in the section under the subheading "Motor Control and Operation of an Embodiment" on page 17 starting at paragraph [0064].

The regenerative braking system of Menegoli, which only is invoked in abnormal circumstances, does not occur during a seek operation. Thus the amended claims further distinguish over Menegoli.

The Examiner previously rejected claim 13, which recited that the "control circuit enters at least one of said regenerative braking states during at least a portion of at least one seek operation to be performed by the disk drive," citing Goretski. As mentioned previously, Goretski doesn't suggest interrupting the current to the drive spindle motor; this continues to be positively recited in all the claims as a feature of the regenerative braking. Reconsideration is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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